

2. IDENTIFICATION OF SCAT OF INDIAN FOX, JUNGLE CAT AND GOLDEN JACKAL BASED ON MORPHOMETRICS

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Carnivore faeces are a valuable source of information for researchers who seek to answer questions of distribution, diet, health, population status, genetic diversity, breeding condition, stress levels and much more of their study animals (Putnam 1984; Reed *et al.* 1997). With several similar sized carnivores coexisting, accurate identification of scats to the species level is imperative. Traditional scat-identification criteria have been based primarily on morphology (Halfpenny 1986; Ciucci *et al.* 1996), which though subjective are rapid, inexpensive and easy to carry out as compared to alternatives, such as bile acid assay through thin-layer chromatography (Major *et al.* 1980), and DNA analysis of scat (Reed *et al.* 1997; Foran *et al.* 1997). Identification of scats of Indian carnivores is still in the domain of natural history (but see Mukherjee *et al.* 2004). We present results of a morphometric measurement based analysis of scat of three species of meso-carnivores that occur sympatrically in many areas of their distributional range. Based on this analysis, we conclude that scats of the Indian Fox can be reliably differentiated from that of the Golden Jackal and Jungle Cat, whereas the scats of the latter two species are morphometrically indistinguishable.

We collected scats of the Golden Jackal (*Canis aureus*) and Jungle Cat (*Felis chaus*) from the Sariska Tiger Reserve, Rajasthan and of the Indian Fox (*Vulpes bengalensis*) from the Rollapadu Wildlife Sanctuary, Andhra Pradesh and Ranebennur Wildlife Sanctuary, Karnataka. Scats of the Indian Fox were collected from outside active dens, thus ensuring correct identification. Scats of Golden Jackal and Jungle Cat were identified from bile acid profiles through

thin-layer chromatography (Mukherjee *et al.* 2004). We took care to collect scats that seemed to come from a single defecation event. These scats were air-dried upon collection and later oven dried at 60 °C. We took measurements of the diameter at three different locations along the length of each distinct segment of scat using a set of callipers (0.01 cm accuracy). Of these, we chose the maximum width of each scat for comparison.

The mean diameter of scats of Golden Jackal was 1.92 cm (SD = 0.29, 95% CI = 0.052, range = 1.63, n = 124), Jungle Cat was 1.87 cm (SD = 0.28, 95% CI = 0.077, range = 1.04, n = 54) and Indian fox was 1.43 cm (SE = 0.31, 95% CI = 0.063, range = 0.9, n = 55).

Based on the 95% confidence intervals, the results indicated no difference in scat diameter between the Golden Jackal and Jungle Cat, while the Indian Fox scats were smaller in diameter. Therefore, it is possible to differentiate Indian Fox scat from both the Golden Jackal and Jungle Cat scat based on diameter.

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